

IN THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the above-referenced application:

1. (Previously Presented) A method of determining layer thickness of a particular area of a substrate during CMP of the substrate, the method comprising:

acquiring an image of a particular area of the substrate while the substrate is moving at a speed of at least 200 lineal feet per minute;

comparing the acquired image to each one of a plurality of stored image patterns; and

converting the acquired image into a layer thickness measurement when the acquired image corresponds to one of said plurality of stored image patterns.

2. (Currently Amended) The method of claim 1, wherein acquiring an image of a particular area of the substrate includes:

projecting a conventional light source onto the substrate; and

utilizing a ~~high-speed~~ camera operative to acquire images of the particular area of the substrate while the substrate is moving at the speed of at least 200 lineal feet per minute.

3. (Previously Presented) The method of claim 1, wherein acquiring an image of a particular area of the substrate includes:

delivering a pulse of light from a coherent light source onto the particular area of the substrate; and

utilizing a conventional camera.

4. (Original) The method of claim 3, wherein said coherent light source comprises a laser.

5. (Previously Presented) The method of claim 1, wherein acquiring an image of a particular area of the substrate includes:

delivering a pulse of light from a broad band light source onto the particular area of the substrate; and

utilizing a conventional camera.

6. (Original) The method of claim 5, wherein said broad band light source comprises a flash lamp.

7. (Previously Presented) The method of claim 1, wherein converting the acquired image into a layer thickness measurement includes converting pixels of the acquired image into layer thickness.

8. (Original) The method of claim 1, wherein said determination of layer thickness of the substrate is performed in situ.

9. (Previously Presented) An apparatus for determining layer thickness of a particular area of a substrate during CMP of the substrate comprising:

an imager adapted to acquire an image of a particular area of the substrate while the substrate is rotating in situ at a speed of at least 200 lineal feet per minute;

a processing unit in electronic communication with said imager;

a memory device in electronic communication with said processing unit and containing a plurality of instructions which, when executed by said processing unit, causes said processing unit to:

compare the image acquired by said imager to each one of a plurality of image patterns stored in said memory device; and

convert the acquired image into a layer thickness measurement when said acquired image corresponds to one of said plurality of image patterns stored in said memory device.

10. (Previously Presented) The apparatus of claim 9, wherein said imager comprises:
a pulsed, coherent light source; and
a conventional camera.

11. (Original) The apparatus of claim 10, wherein said coherent light source comprises a laser.

12. (Currently Amended) The apparatus of claim 9, wherein said imager comprises:
a conventional light source; and
a high-speed camera operative to acquire images of the particular area of the substrate while the substrate is moving at the speed of at least 200 lineal feet per minute.

13. (Previously Presented) The apparatus of claim 9, wherein said imager comprises:
a pulsed, broad band light source; and
a conventional camera.

14. (Original) The apparatus of claim 13, wherein said broad band light source comprises a flash lamp.

15. (Previously Presented) A method of determining end-point during CMP of a substrate comprising:

rotating the substrate;
acquiring an image of an area of the rotating substrate while the substrate is moving at a speed of at least 200 lineal feet per minute using an imager;
comparing the acquired image to stored image patterns;
converting the acquired image into a layer thickness measurement when the acquired image corresponds to one of the compared stored image patterns; and
stopping CMP based upon the layer thickness measurement.

16. (Currently Amended) The method of claim 15, wherein acquiring an image of an area of the rotating substrate includes:

projecting a conventional light source onto the area of the substrate; and
utilizing a high-speed camera operative to acquire images of a particular area of the substrate while the substrate is moving at the speed of at least 200 lineal feet per minute.

17. (Previously Presented) The method of claim 15, wherein acquiring an image of an area of the rotating substrate includes:

delivering a pulse of light from a coherent light source onto the area of the substrate;
and
utilizing a conventional camera.

18. (Original) The method of claim 17, wherein said coherent light source comprises a laser.

19. (Previously Presented) The method of claim 15, wherein acquiring an image of an area of the rotating substrate includes:

delivering a pulse of light from a broad band light source onto the area of the substrate; and
utilizing a conventional camera.

20. (Original) The method of claim 19, wherein said broad band light source comprises a flash lamp.

21. (Previously Presented) The method of claim 15, wherein converting the acquired image into a layer thickness measurement when the acquired image corresponds to one of the compared stored image patterns includes converting pixels of the acquired image into a layer thickness measurement.

22. (Previously Presented) The method of claim 15, wherein said acquiring an image of an area of the rotating substrate is performed in situ.

23. (Previously Presented) An apparatus for determining end-point of an area of a substrate during CMP of the substrate comprising:

an imager configured to acquire images of the substrate while the substrate is rotating in situ at a speed of at least 200 lineal feet per minute;
a processing unit in electronic communication with said imager;

a memory device in electronic communication with said processing unit and containing a plurality of instructions which, when executed by said processing unit, causes said processing unit to:

compare images of the substrate acquired by said imager to image patterns stored in said memory device;

convert an acquired image into a layer thickness measurement when said acquired image corresponds to a selected image pattern stored in said memory device; and

stop CMP based upon the layer thickness measurement.

24. (Previously Presented) The apparatus of claim 23, wherein said imager comprises:
a pulsed, coherent light source; and
a conventional camera.

25. (Original) The apparatus of claim 24, wherein said coherent light source comprises a laser.

26. (Currently Amended) The apparatus of claim 23, wherein said imager comprises:
a conventional light source; and
a high-speed camera operative to acquire images of at least a particular area of the substrate while the substrate is rotating in situ at the speed of at least 200 lineal feet per minute.

27. (Previously Presented) The apparatus of claim 23, wherein said imager comprises:
a pulsed, broad band light source; and
a conventional camera.

28. (Original) The apparatus of claim 27, wherein said broad band light source comprises a flash lamp.